

What is Claimed:

1. A method for removing bone marrow from an essentially intact bone graft comprising:

5 inducing a pressure mediated flow of solvent through an opening in a bone shaft of said essentially intact bone graft, wherein said pressure mediated flow is carried out for a time effective to remove said bone marrow from said essentially intact bone graft.

2. The method of claim 1, wherein said flow of solvent is mediated at a positive pressure of 1 atmosphere or above.

10 3. The method of claim 1, wherein said flow of solvent is mediated at a negative pressure below 1 atmosphere.

4. The method of anyone of claims 2 or 3, wherein said pressure mediated flow is induced, and effluent solvent solubilized bone marrow is collected, in an essentially closed system.

15 5. A method for reducing an initial quantity of viral particles and bacterial particles present in an essentially intact bone graft, comprising:

removing bone marrow including any contaminating viral particles and bacterial particles, from said essentially intact bone graft to produce a cleaned bone graft, wherein said initial quantity of viral and bacterial particles present in said cleaned bone graft is at a level below said initial quantity of viral particles and bacterial particles.

5 6. The method according to claim 5, wherein said step of removing bone marrow, comprises:

inducing a pressure mediated flow of solvent through an opening in a bone shaft of said essentially intact bone graft, wherein said pressure mediated flow of solvent is effective to remove said bone marrow.

10 7. The method of claim 6, wherein said flow of solvent is mediated at a positive pressure of 1 atmosphere or above.

8. The method of claim 6, wherein said flow of solvent is mediated at a negative pressure below 1 atmosphere.

15 9. The method of claim 6, further comprising:
inactivating said contaminating viral particles and bacterial particles, wherein said step of removing and said step of inactivating are performed simultaneously.

116, 17, 02, 18

44, 48, 49

152-116P-SHK

25 20

10. The method of any one of claims ~~1, 6 or 9~~, wherein said solvent comprises one or more members selected from the group consisting of:

a bacteriocidal agent and a viricidal agent.

116, 17, 02, 18

24 21

44, 48, 02, 49

11. The method of any one of claims ~~9 or 10~~, wherein said method is carried out within an essentially closed system.

25 22

12. An essentially intact bone graft free from bone marrow elements and suitable for transplantation into a human, produced by the process as claimed in any

~~44, 48, 02, 49~~ 116, 17, 02, 18

one of claims ~~1, 5, 6 or 9~~.

26 23

13. An essentially intact bone graft essentially free from bone marrow elements and essentially free from viral and bacterial contamination, and suitable for transplantation into a human, produced by the process as claimed in any one of claims

44, 48, 02, 49

~~1, 5, 6 or 9~~.

116, 17, 02, 18

27 27

14. A method for producing an essentially intact bone graft suitable for transplantation into a human, comprising:

inducing a negative pressure mediated flow of a first solvent, said first solvent comprising one or more detergents, through an opening in a bone shaft of said essentially intact bone graft to produce a cleaned intact bone graft; wherein said

44

negative pressure mediated flow is carried out for a time effective to produce a cleaned bone graft essentially free from bone marrow.

^{28 12}
15. The method of claim ^{11 27}14, wherein a first volume of said first solvent is drawn through said essentially intact bone graft and is collected as waste.

^{29 13}
16. The method of claim ^{12 28}15, further comprising:
inducing a negative pressure mediated flow of a second volume of said first solvent through said opening wherein said second volume of said first solvent is recirculated through said essentially intact bone graft.

^{30 14}
17. The method of ^{anyone} ^{28 29} ^{12 13}anyone of claims 15 or 16, further comprising:
inducing a negative pressure mediated flow of a second solvent, said second solvent comprising a decontaminating agent, through said opening to produce a decontaminated intact bone graft.

^{31 15}
18. The method of claim ^{14 30}17, wherein a second volume of said second solvent is drawn through said essentially intact bone graft and is collected as waste.

15 19. The method of claim 18, further comprising:

inducing a negative pressure mediated flow of a second volume of said second solvent through said opening wherein said second volume of said second solvent is recirculated through said essentially intact bone graft.

5 20. An essentially intact bone graft suitable for transplantation into a human produced by the process as claimed in anyone of claims 14-18 or 19.

 21. An essentially intact bone graft suitable for implantation into a human comprising:

 an essentially intact bone graft essentially free from bone marrow elements, bacteria particles and virus particles.

10 22. The bone graft of claim 21, produced by the process as claimed in anyone of claims 1, 5, 6, 14 or 17.

 23. The method of anyone of claims 15 or 17, wherein said waste is collected in an essentially closed system.

15 24. The method of any one of claims 1, 3, 6, 14, 15 or 16, further comprising:

 sonicating said essentially intact bone graft in an ultrasonic cleaner, wherein said inducing is carried out simultaneously with said sonicating.

25. The method of claim 24, wherein said ultrasonic cleaner is operated in a range of from 40KHz to 47 KHz.

26. An essentially intact bone graft suitable for transplantation into a human, produced by the process as claimed in claim 24.

5 27. An essentially intact bone graft suitable for implantation into a human produced by the process as claimed in 25.

add a7